APPLICATION NOTE

AE-AN-TR-006-TR Multicoax Series Integrating to instrumentation

Purpose:

This application note provides detailed information on integrating your TR Multicoax series with instrumentation.

Permissible Coax Connection Hardware Instruments:

- 5/16” Open ended torque wrench, set to 8 in-lb. (0.90 Nm)
- Ardent hardware tools
- 5/32” Open ended wrench
- 5/16” Open ended wrench
- 7 mm Open ended wrench

Figure 1: Recommended Permissible Hardware Instruments

CAUTION: Do not use other tools like pliers and Vise-Grips as they can damage the high precision connectors.

Connecting TR Multicoax Connector to Instrumentation:

CAUTION: Care must be considered when assembling connections. Misalignment will significantly damage the fingers or plug of the coax connector causing measurement error and or malfunction. Follow these general cautionary guidelines during the procedure to ensure the highest percentage of success:

- Keep coax cables and connectors stationary during the connection process to prevent connector wear and damage.
- Do not exceed a torque of 8 in-lb. (0.90 Nm) at the coupling nut.
- Inspect the connector coax for any abnormalities.
- Inspect metal surfaces for scratches and foreign object debris (FOD). If found, clean thoroughly to prevent measurement error and or malfunction.
- Minimize skewed cable geometry by handling them with care during assembly. Do not pull, rotate, or place the cable assembly under tension.

Procedure:

1. Verify that calibration ports are gauged, concentric, and set to the right pin depth. Remember the function of the coupling nut is to bring and hold the center conductors to a repeatable depth.
2. Carefully align the coax connector to the calibration reference port.
3. While holding the cable assembly and adapter port stationary, rotate the coupling nut by hand.

CAUTION: **Hand tighten the connection first**. Do not force the connection if the coupling nut is not threading smoothly.

4. To ensure the connection is set to a repeatable pin depth, grip the base of the female coax connector by hand or with an open-ended wrench. Insert the torque wrench onto the coupling nut such that it forms an angle 90° or less with the stationary wrench. Hold the torque wrench from the end (See Figure 11).
5. While holding the coax cables and connectors stationary, apply a moment force with the torque wrench in a clockwise direction, decreasing the angle between the torque and stationary wrenches.

NOTE: The applied moment force should be concentrated at the coupling nut only.

6. Keep the coax cables and connectors stationary and proceed to tighten connection by gently applying the moment force at the coupling nut until the torque wrench begins to yield slightly.

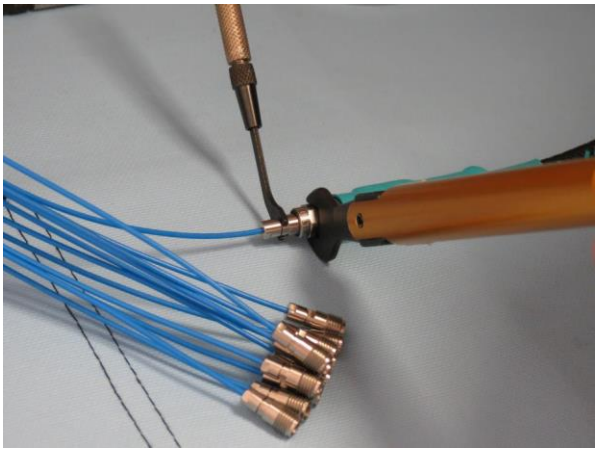

Figure 2: Connection Torque Procedure

Disconnecting TR from Instrumentation:

1. Carefully hold the device under test and instrument cables stationary, either by hand or with the corresponding permissible open-ended wrenches: 5/32”, 5/16”, or 7mm.
2. Place the torque wrench on the coupling and open-ended wrench on that of the test equipment connection.
3. Repeat the connection procedure with an opposite moment force, a counterclockwise movement increasing the 90°angle between the torque and stationary wrenches.
4. When the coupling nut releases and feels free, continue to uncouple the connection by hand.

Application Note Summary:

- Only use tools specified in this Application Note.
- Keep coax cables and connectors stationary during the connection process.
- Inspect metal surfaces for scratches and F.O.D. (Foreign Object Debris). If found clean thoroughly to prevent measurement error and or malfunction.
- Misalignment will significantly damage the fingers or plug of the coax connector.
- Tighten connectors by hand as much as possible before using open ended wrench and torque wrench.
- Do not exceed a torque of 8 in-lb. (0.90 Nm) at the coupling nut, in hopes to avoid damage and measurement error.

Who Is Amphenol Ardent Concepts?

Amphenol Ardent Concepts is a leading designer and manufacturer of high performance multicoax and coaxial assemblies, connectors, and sockets used in the development of next generation semiconductors and electronics systems. Our core technology is the smallest, fastest, most electrically efficient compression mount connector technology worldwide. As data rate requirements increase and devices and systems shrink, Ardent's products deliver superior signal integrity in a dense footprint that can be reusable across programs to maximize cost savings.